

Serial No.: 09/682,540
Confirmation No.: 5619
Applicant: DANIELSSON, Mats
Atty. Ref.: 06730.0011.NPUS00

AMENDMENTS TO THE SPECIFICATION

Please replace paragraphs [0038] and [0043] with the following paragraphs:

[0038] A preferred embodiment of an X-ray imaging apparatus 500, preferably but not exclusively for mammography is illustrated in Figure 5. 501 denotes an X-ray source, 502 is a first rough collimator, 503 a second collimator, 504 is a detector array sensor arrangement comprising a plurality of detector arrangements, 505 and 506 are lower upper holders, respectively, both transparent to x-rays; 507 is an object to be examined and 508 a support. The field of view between beams is denoted with 509 and also illustrated with dotted lines. The X-ray object 507 for mammography is a female breast that is compressed according to the standard technique using compression holders 505 and 506, the ends of the latter being arranged with x-ray blocking material. A second third collimator 510 is also provided, the slots of which are matched to the collimator 503 above so that the X-rays coming straight from the source, without deflections, and pass collimator 503 will also pass collimator 510. After the third collimator 510, the sensor arrangement 504 comprising an array of detectors 511 is placed under each slot in such a way that all X-rays coming straight from the source without deflections that pass the second collimator 503 and pass the third collimator 510 will also hit the detector arrays beneath the slots and are registered by dedicated electronics. In this case detector arrangements according to fig. 2a are used and arranged in parallel on a carrier with their longitudinal axis directed towards the plane of the drawing. The second and third collimators 503 and 510 are placed on a mechanical support 508 together with the detector arrays 504. This support is connected to an accurate linear stage that can move the slots relative to the object. The scanning path is illustrated with dashed arrow. The stage is computer 513 controlled and equipped with an accurate position reading. While the slots are moving data from the detector arrays are read out, through connections 512 together with the present coordinate according to the position reading. From this information the image is reconstructed. Although the scanning path illustrated here is a reciprocating movement due to the circular symmetry of the radiation of the x-ray source, the radiation path can be arranged with refractive means to refract the beam into a plane parallel with the plane of the holders, whereby a linear movement of the collimators and detectors will be needed. Moreover, due to the circular radiation, the detectors are arranged in substantially circular carrier, which in case of a linear movement should be arranged in a flat carrier.

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[0043] According to another method, before the scan starts, all slots of the third collimator 510 are placed substantially outside the field of view. After the scan starts it should reach a constant speed before the first pair of slots formed in the second and third collimators 503, 510 enters the field of view. During the scan, the data containing information about the number of X-rays hitting the detector is read out as frequently as possible. The data for one read-out will consist of a vector of numbers representing the X-ray flux in each of the pixels of the sensor array. This vector is stored. When the scan is finished, the image resulting from one array of vectors consists of a matrix of all the vectors from the individual readouts.